GENERAL / Teleton

MODEL : A480s
STEREO Hi-Fi AMPLIFIER

SERVICE MANUAL

SH 097/30

Germany : GENERAL CORPORATION JAPAN (Euro) GmbH
D-4000 Düsseldorf-Heerdt, Werftstr. 20
Tel. 0211-50 47 021 Tlx. 8588366

Great Britain : TELETON Electro (U.K.) Co., Ltd.
Somerton Works, Prince Avenue,
Westcliff-on-Sea, Essex, SSO OHU
Tel. 0702 337681 Tlx. 99338

Netherlands : GENERAL CORPORATION JAPAN (NL) B.V.
Marconviweg 10, Vianen
Tel. 03 473-37 44 Tlx. 40 581

Distributor :

Switzerland
Allelectric AG
Gartenstr. 12
5600 Lenzburg
Tel. 064 51 6951
Tlx. 68 208

France
TELECTRODIS S.A.
21, rue Paul-Lafargue,
94270 Le Kremlin-Bicêtre
Tel. 6 77 69 34
Tlx. 20 44 68

Specifications are subject to change without notice.

SPECIFICATION

ELECTRICAL PERFORMANCE

Output power at 1,000Hz, 0.7% THD. (8Ω) : 22 Watts.

Output Power at 40Hz–2,000Hz 0.7% 8Ω : 20 Watts.

Power Bandwidth (8Ω, 0.7%, -3dB) : 10W, 10Hz–30,000Hz

Maximum Input Signal
(Input: 1,000Hz, output: 2 Watts, 0.7% THD.)
Tuner : 4V
Phono (magnetic) : 50mV
AUX : 4V
Tape : 4V

Frequency Response (Output: 2 Watts at 1,000Hz)
Tuner/AUX/Tape : 40Hz–16,000Hz ±0.8 dB
Phono (equalizer: RIAA) : 40Hz–16,000Hz ±1 dB

Tone Control Characteristics (Input : AUX)
Bass : 100Hz $^{+8}_{-10}$ dB
Treble : 10,000Hz ±10 dB
Loudness (Input: AUX 200mV, volume control: maximum gain minus 30 dB.)
100Hz +10 dB
10,000Hz +5 dB
High-cut filter fc=4KHz –6 dB/oct.

Input Sensitivity & Input Impedance (Output: 20 Watts at 1,000Hz)
Tuner : 200mV/100KΩ
AUX : 200mV/100KΩ
Tape : 200mV/100KΩ
Phono : 3mV/47KΩ

Minimum Volume Hum & Noise : 0.5mV

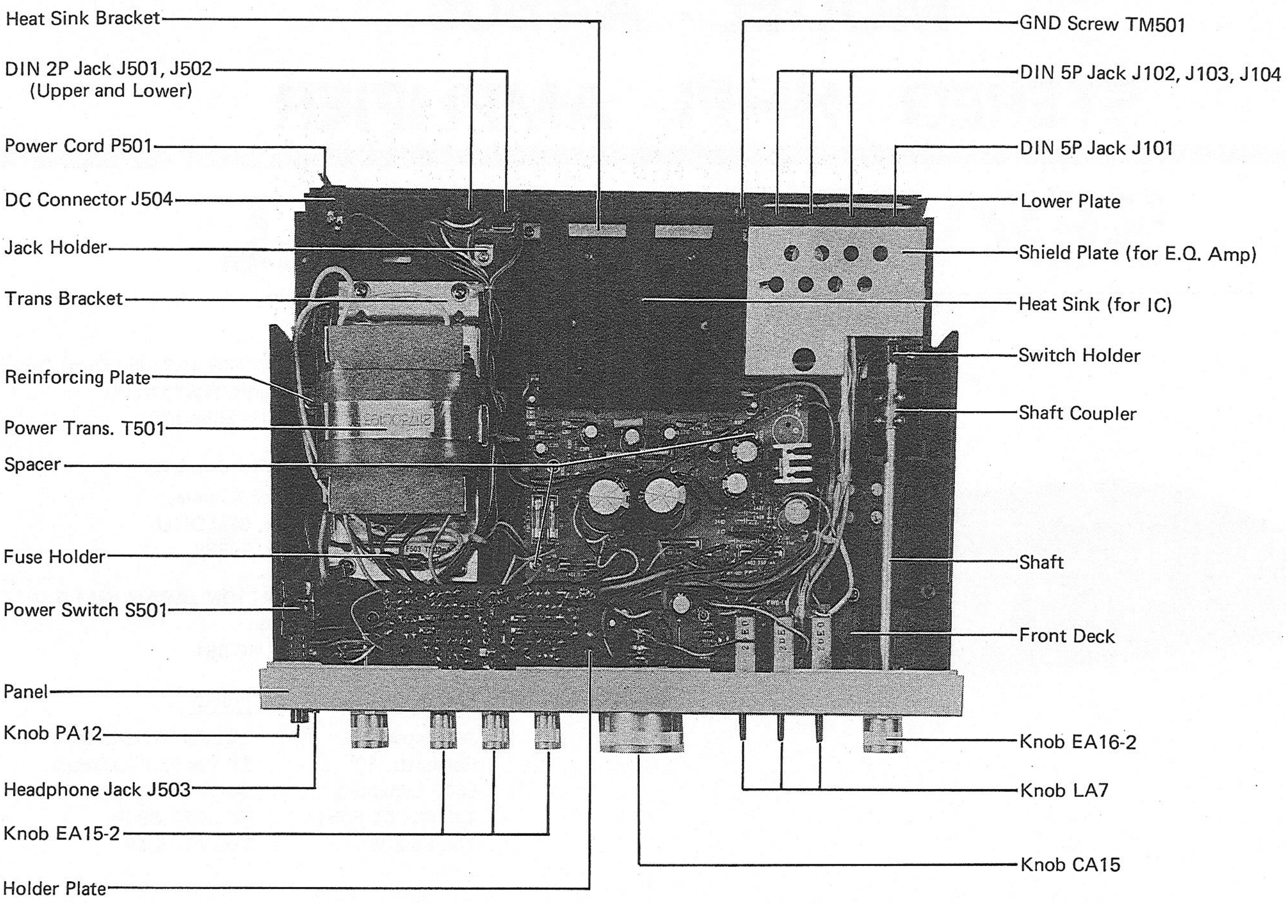
Signal to Noise Ratio
(Output power: 50 m watts at 1,000Hz, unweighted)
Tuner : 58 dB
AUX : 58 dB
Tape : 58 dB
Phono : 58 dB

Channel Gain Difference
(Volume control shall be changed from max. position to –46 dB).
at 1,000Hz 2 dB max.
250Hz – 6,300Hz 4 dB max.

Tape Output Voltage and Output Impedance
(Input: AUX at 1,000Hz)
Output voltage (open) : 30mV
Output impedance : 88KΩ ±20%

251

PARTS LOCATION


Heat Sink Bracket
DIN 2P Jack J501, J502 (Upper and Lower)
Power Cord P501
DC Connector J504
Jack Holder
Trans Bracket
Reinforcing Plate
Power Trans. T501
Spacer
Fuse Holder
Power Switch S501
Panel
Knob PA12
Headphone Jack J503
Knob EA15-2
Holder Plate
GND Screw TM501
DIN 5P Jack J102, J103, J104
DIN 5P Jack J101
Lower Plate
Shield Plate (for E.Q. Amp)
Heat Sink (for IC)
Switch Holder
Shaft Coupler
Shaft
Front Deck
Knob EA16-2
Knob LA7
Knob CA15

WARNING: FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER RECOMMENDED PARTS. THESE PARTS ARE IDENTIFIED BY (⚠) ON THE SCHEMATIC DIAGRAM.

The manufacturer's warranty and liabilities will be void if any unauthorized modifications, alterations or additions are made. For replacement purposes, use the same type or specified type of wire and cable, ensuring that the positioning of the wires is followed (especially for power supply circuits). Use of alternative wiring or positioning could result in damage to the set or in a shock or fire hazared.

POWER LEVEL INDICATOR ADJUSTMENT

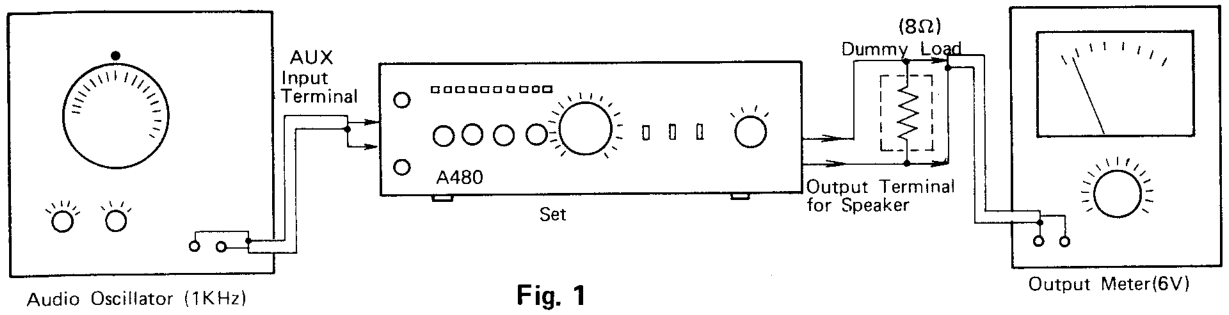

AUX
Input
Terminal
A480
Set
(8Ω)
Dummy Load
Output Terminal
for Speaker
Audio Oscillator (1KHz)
Output Meter(6V)

Fig. 1

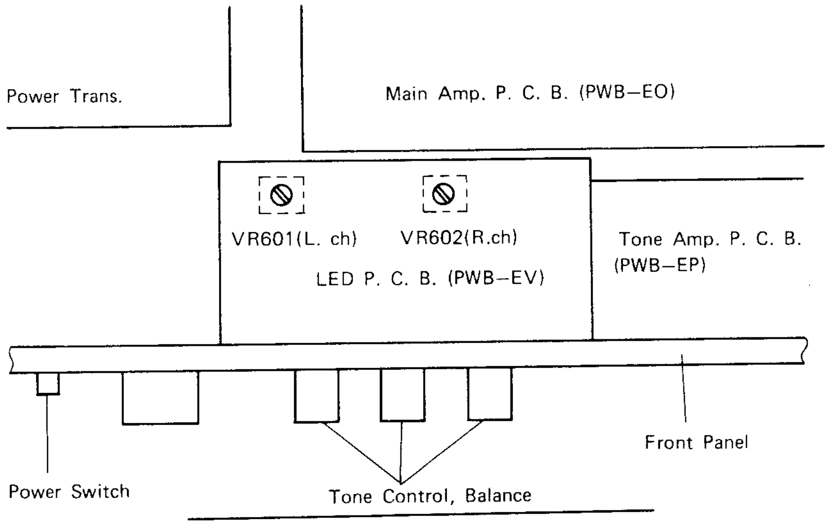

Power Trans.
Main Amp. P. C. B. (PWB–EO)
VR601(L. ch)
VR602(R.ch)
LED P. C. B. (PWB–EV)
Tone Amp. P. C. B.
(PWB–EP)
Front Panel
Power Switch
Tone Control, Balance

Fig. 2

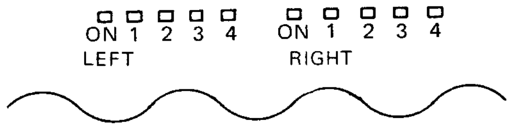
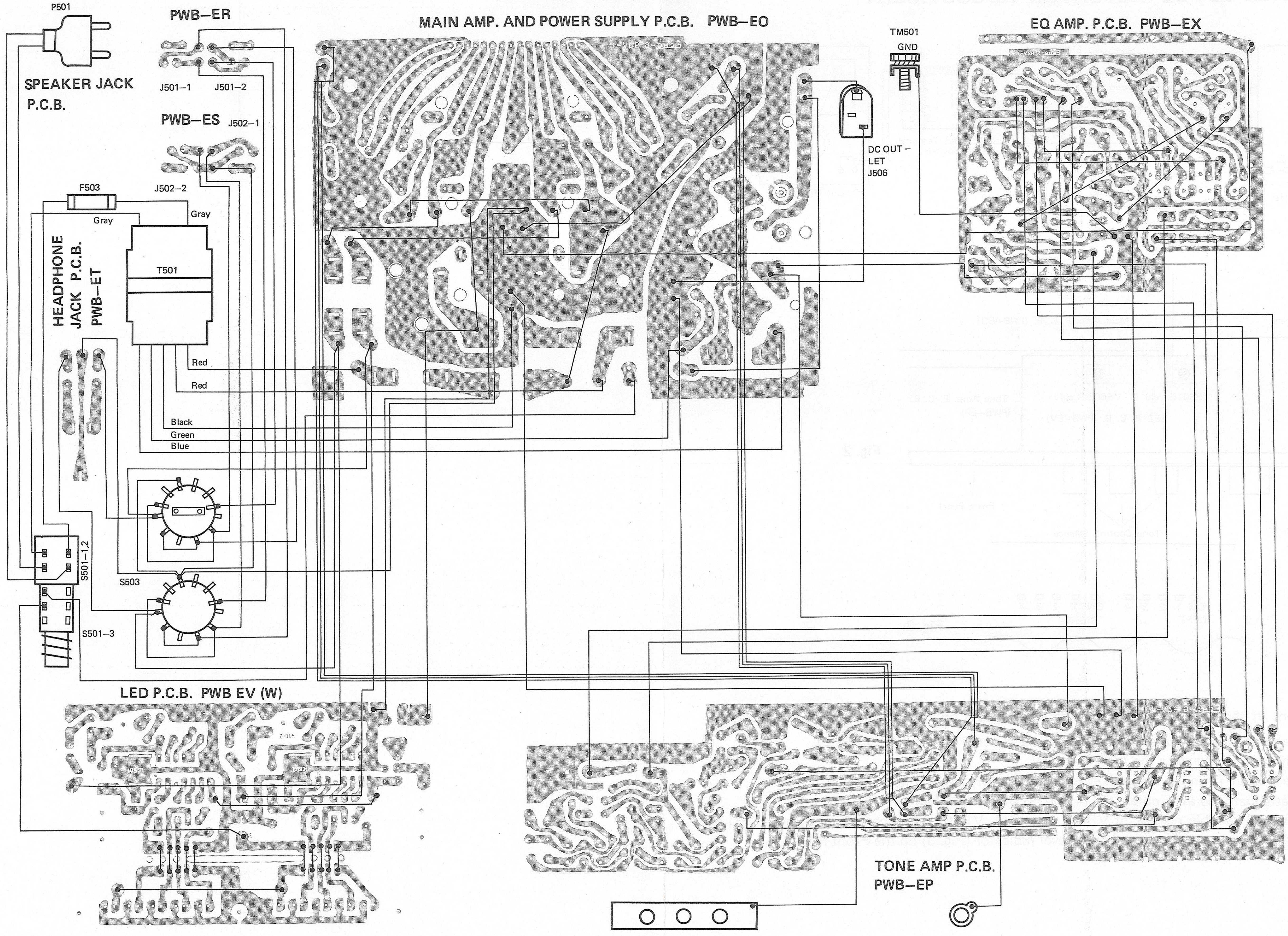

ON 1 2 3 4
LEFT
ON 1 2 3 4
RIGHT

Fig. 3

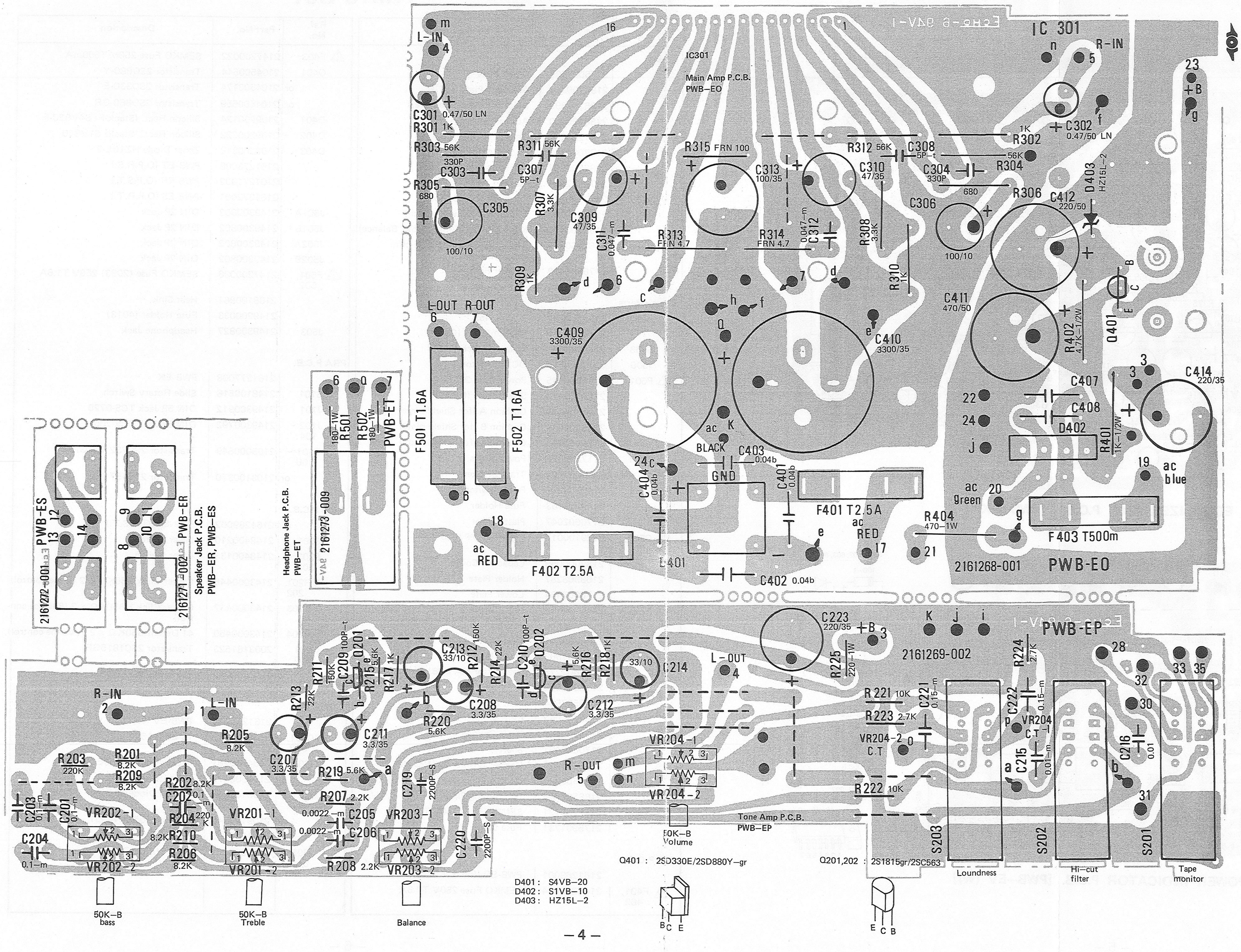
Level adjustment of the Power Indicator (indication by LED on Front Panel) is made as follows:

1. Connect the measuring equipment and the set to be adjusted as illustrated in Fig. 1.
2. Apply an 1KHz audio signal to the AUX Terminal.
3. Connect the Output Terminal for speaker to an 8Ω dummy load surely.
4. Adjust the attenuator so as to obtain 6V (4.5W) on the Output Meter.
5. Adjust semi-fixed variable resistor of VR601 (for Lch), VR602 (for Rch) to light up the LED of the "4" position while watching the Power Level Indicator (Fig. 3) on the Front Panel.

WIRING DIAGRAM

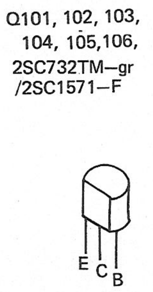

MAIN AMP. AND POWER SUPPLY P.C.B. PWB–EO
EQ AMP. P.C.B. PWB–EX
P501
PWB–ER
SPEAKER JACK P.C.B.
J501–1
J501–2
PWB–ES
J502–1
TM501
GND
DC OUT-LET J506
F503
J502–2
Gray
Gray
T501
HEADPHONE JACK P.C.B. PWB–ET
Red
Red
Black
Green
Blue
S501–1,2
S503
S501–3
LED P.C.B. PWB EV (W)
TONE AMP P.C.B. PWB–EP

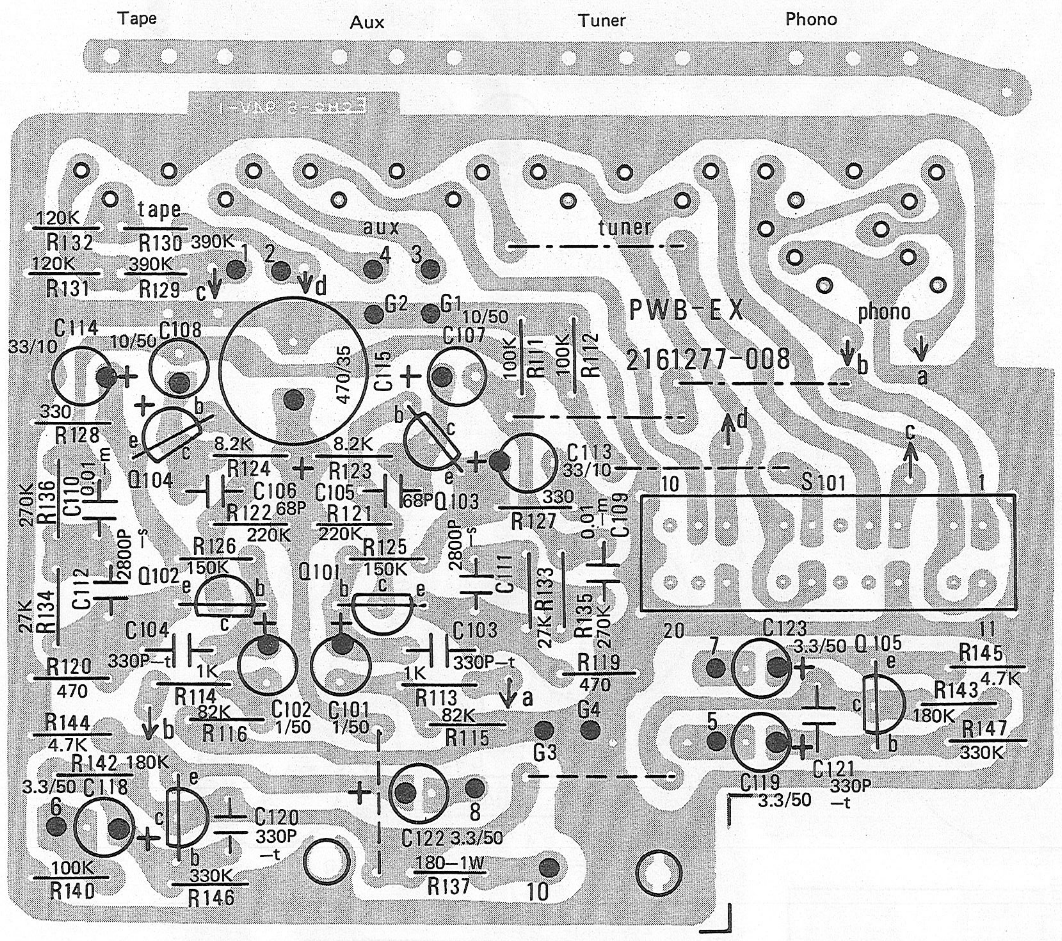
MAIN AMP. P. C. BOARD



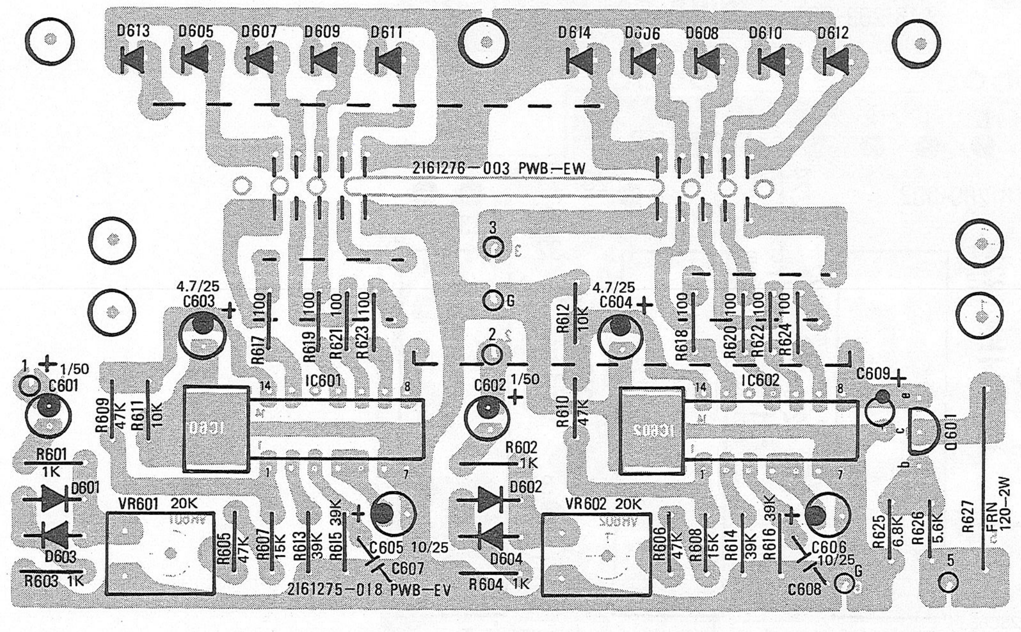
IC301
Main Amp P.C.B.
PWB-EO
IC 301
L-IN
R-IN
C301 0.47/50 LN
R301 1K
C302 0.47/50 LN
R302 1K
R303 56K
R304 56K
R305 680
R306 680
R311 56K
R312 56K
C303 330P
C304 330P
C307 5P-t
C308 5P-t
R307 3.3K
R308 3.3K
C309 47/35
C310 47/35
C311 0.047-m
C312 0.047-m
R313 FRN 4.7
R314 FRN 4.7
R315 FRN 100
C313 100/35
C305 100/10
C306 100/10
R309 1K
R310 1K
C412 220/50
D403 HZ15L-2
C411 470/50
R402 4.7K-1/2W
Q401
C409 3300/35
C410 3300/35
L-OUT R-OUT
F501 T1.6A
F502 T1.6A
C407
C408
D402
R401 1K-1/2W
C414 220/35
BLACK
GND
C403 0.04b
C404 0.04b
C401 0.04b
C402 0.04b
D401
F401 T2.5A
F402 T2.5A
F403 T500m
R404 470-1W
ac RED
ac green
ac blue
2161268-001
PWB-EO
Headphone Jack P.C.B.
PWB-ET
R501 180-1W
R502 180-1W
2161273-009
Speaker Jack P.C.B.
PWB-ER, PWB-ES
PWB-ES
PWB-ER
2161272-001
2161271-002
PWB-EP
2161269-002
Tone Amp P.C.B.
PWB-EP
C223 220/35
R225 220-1W
R201 8.2K
R202 8.2K
R203 220K
R204 220
R205 8.2K
R206 8.2K
R207 2.2K
R208 2.2K
R209 8.2K
R210 8.2K
R211 150K
R212 150K
R213 22K
R214 22K
R215 5.6K
R216 5.6K
R217 1K
R218 1K
R219 5.6K
R220 5.6K
R221 10K
R222 10K
R223 2.7K
R224 2.7K
C201 0.1-m
C202 0.1-m
C203 0.1-m
C204 0.1-m
C205 0.0022-m
C206 0.0022-m
C207 3.3/35
C208 3.3/35
C209 100P-t
C210 100P-t
C211 3.3/35
C212 3.3/35
C213 33/10
C214 33/10
C215 0.01-m
C216 0.01
C219 2200P-S
C220 2200P-S
C221 0.15-m
C222 0.15-m
Q201
Q202
VR201-1
VR201-2
VR202-1
VR202-2
VR203-1
VR203-2
VR204-1
VR204-2
VR204 C.T
VR204-2 C.T
R-OUT
L-OUT
+B
S201
S202
S203
Loundness
Hi-cut filter
Tape monitor
50K-B bass
50K-B Treble
Balance
50K-B Volume
Q401 : 2SD330E/2SD880Y-gr
Q201,202 : 2S1815gr/2SC563
D401 : S4VB-20
D402 : S1VB-10
D403 : HZ15L-2
B C E
E C B

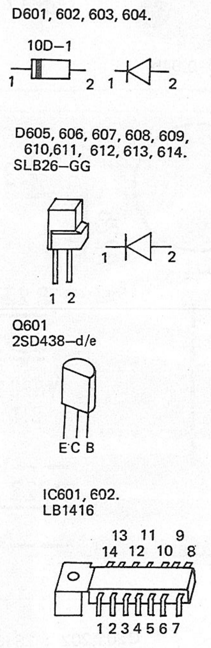
Equalizer Amp./Power Indicator P.C. Board


Q101, 102, 103, 104, 105,106, 2SC732TM–gr /2SC1571–F
E
C
B


Tape
Aux
Tuner
Phono
tape
aux
tuner
phono
PWB-EX
2161277-008
S101
R132 120K
R131 120K
R130 390K
R129 390K
C114 33/10
C108 10/50
C107 10/50
C115 470/35
R111 100K
R112 100K
R128 330
R136 270K
C110 0.01
Q104
R124 8.2K
R123 8.2K
C106 68P
C105 68P
R122 220K
R121 220K
Q103
C113 33/10
R127 330
C109 0.01
C112 2800P
Q102
R126 150K
R125 150K
Q101
C111 2800P
R133 27K
R134 27K
R135 270K
C104 330P–t
C103 330P–t
R120 470
R119 470
R114 1K
R113 1K
R116 82K
R115 82K
C102 1/50
C101 1/50
C123 3.3/50
Q105
R145 4.7K
R143 180K
R147 330K
C121 330P –t
C119 3.3/50
R144 4.7K
R142 180K
C118 3.3/50
C120 330P –t
C122 3.3/50
R137 180–1W
R140 100K
R146 330K
G1
G2
G3
G4

EQUALIZER AMP. P.C.B. [PWB–EX]


D613
D605
D607
D609
D611
D614
D606
D608
D610
D612
2161276–003 PWB–EW
C601 1/50
C603 4.7/25
C604 4.7/25
C602 1/50
C609
R609 47K
R611 10K
R610 47K
R612 10K
R617 100
R619 100
R621 100
R623 100
R618 100
R620 100
R622 100
R624 100
IC601
IC602
Q601
R601 1K
R602 1K
R603 1K
R604 1K
D601
D602
D603
D604
VR601 20K
VR602 20K
R605 47K
R607 15K
R613 39K
R615 39K
R606 47K
R608 15K
R614 39K
R616 39K
C605 10/25
C606 10/25
C607
C608
R625 6.8K
R626 5.6K
R627 FRN 120–2W
2161275–018 PWB–EV


D601, 602, 603, 604.
10D–1
1
2
1
2
D605, 606, 607, 608, 609, 610,611, 612, 613, 614. SLB26–GG
1 2
1
2
Q601
2SD438–d/e
E C B
IC601, 602.
LB1416
13 11 9
14 12 10 8
1 2 3 4 5 6 7

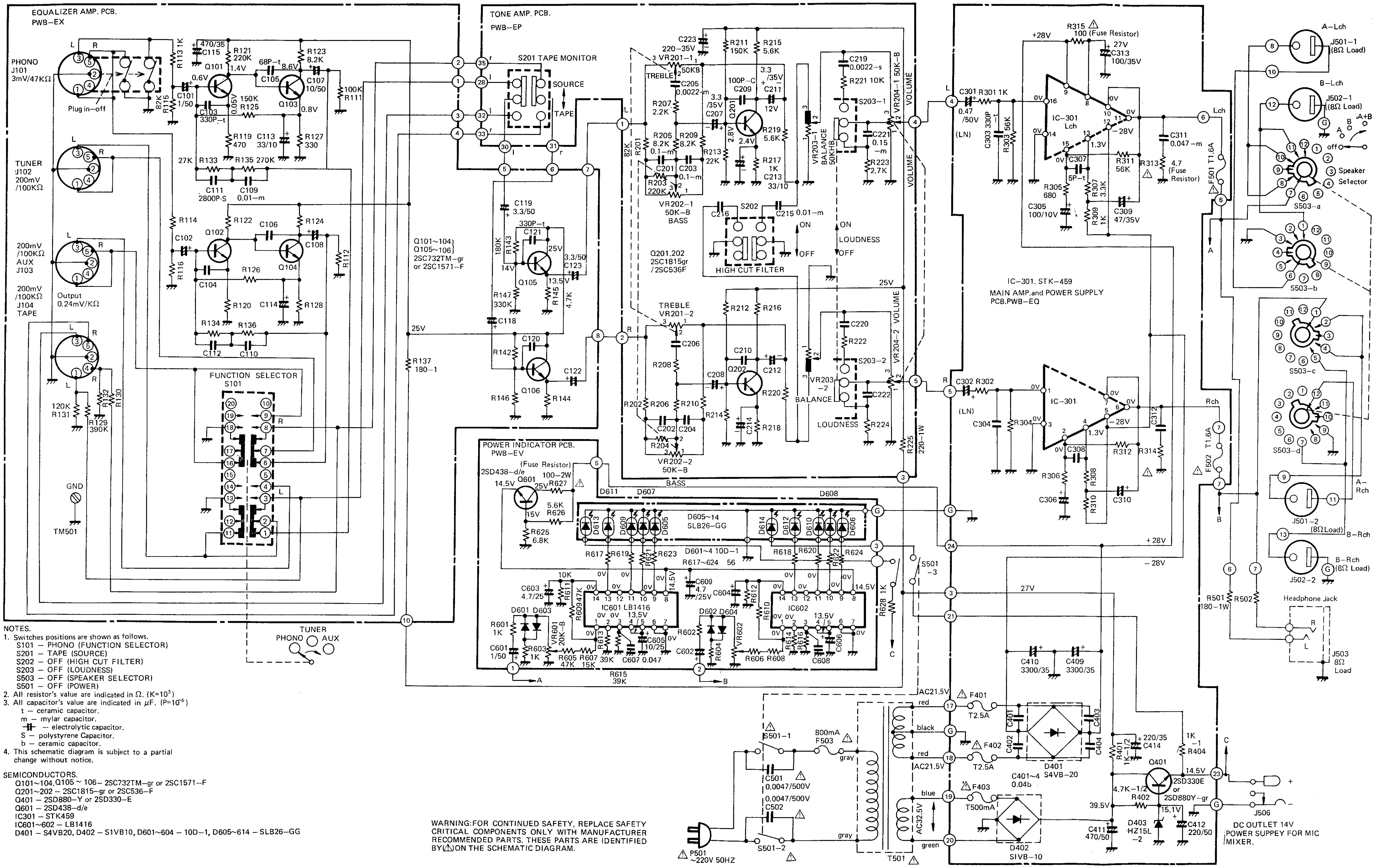
POWER INDICATOR P.C.B. [PWB–EV (W)]

PARTS LIST

Ref. No.	Part No.	Description
Cabinet		
	2176001505	Upper Plate
	2186100364	Adiabatic Plate (P.T.)
	2186100392	Adiabatic Plate (Stabilizer)
	2186100420	Adiabatic Plate (IC)
	2171201256	Decoration Plate
	2187000398	Knob CA15 (Volume)
	2186100387	Shield Plate (for Tuner)
	2176002458	Panel
	2187100488	Knob EA16-2 (Selector)
	2187300305	Knob PA12 (Power switch)
	2187100476	Knob EA15-2 (Bass, Treble, Balance)
	2187600151	Knob LA7 (Loudness, Hi-cut, Tape monitor)
	2176301400	Rubber Foot
Chassis Parts		
IC301	2102400232	IC STK-459
	2168101040	Heat sink (for IC)
S503	2148000023	Rotary Switch (1089)
J506	2149300810	DC Connector
⚠ P501	2195000065	Power Cord 2P
	2186100413	Shield Plate (for EQ)
	2176301439	Cushion A (for Shield plate)
	2176301442	Cushion B (for Shield plate)
	2176300343	Cushion C (for Shield plate)
⚠ T501	2117300225	Power Trans.
	2168507887	Trans Bracket
⚠ S501	2148200396	Power Switch
	2149200103	Fuse Holder
	2176602047	Plastic Foot
⚠ C501, 502	2129100017	Capacitor MP 0.0047μF
	2182000059	Capacitor Cover
	2168508287	Holder Plate
	2176002464	Lower Plate
TM501	2149100192	GND Screw
	2176001600	F. Deck
	2168507541	Heat Sink Bracket
	2168101008	Shield Plate
	2176602276	Spacer (for MA PCB)
	2176602005	SW Holder
	2168507524	Jack Holder
	2182400062	Cord Stopper SR-4P-4
	2170600455	Shaft Coupler
	2170600461	Shaft
	2176301425	Rubber Cushion B (12ϕ x 8)
	2176300007	Rubber Cushion (775) 5 x 15 x 5
	2168507786	Reinforcing Plate
⚠ F503	2147200121	SEMKO Fuse 250V T800mA
	2175901731	Fuse Label
MA P.C.B.		
	2161268001	PWB-EO (P.R.S.T.)
⚠ F401, 402	2147200114	SEMKO Fuse 250V T2.5A

Ref. No.	Part No.	Description
⚠ F403	2147200022	SEMKO Fuse 250V T500mA
Q401	2104500544	Transistor 2SD880-Y
or	2104500174	Transistor 2SD330-E
or	2104500559	Transistor 2SD880-GR
D401	2109200124	Silicon Rect. (Stack-F) S4VB20-F
D402	2109200222	Silicon Rect. (Stack) S1VB10
D403	2108200319	Zener Diode HZ15L-2
	2161273009	PWB-ET (O.P.R.S.)
	2161271002	PWB-ER (O.P.S.T.)
	2161272001	PWB-ES (O.P.R.T.)
J501A	2149300802	DIN 2P Jack
J501B	2149300802	DIN 2P Jack
J502A	2149300802	DIN 2P Jack
J502B	2149300802	DIN 2P Jack
⚠ F501, 502	2147200036	SEMKO Fuse (2093) 250V T1.6A
	2168100961	Heat Sink
	2149200033	Fuse Holder (4013)
J503	2149300827	Headphone Jack
PRA P.C.B.		
	2161277008	PWB-EX
S101	2148100518	Slide Rotary Switch
J101	2149300912	DIN 5P Jack TCS-0720
J102～104	2149300792	DIN 5P Jack TCS-700
Q101～106	2103000649	Transistor 2SC732 TM-GR
or	2103100370	Transistor 2SC1571F
Tone P.C.B.		
	2161269002	PWB-EP (O.R.S.T.)
S201	2148400210	Lever Switch
S202～203	2148400133	Lever Switch
VR201, 202	2143000445	Center Click B50KΩ x 2 (Tone control)
VR203	2143000432	Center Click HB50KΩ x 2 (Balance control)
VR204	2143000450	41 Detent B50KΩ x 2 (Volume control)
Q201, 202	2003181523	Transistor 2SC1815GR
or	2103000043	Transistor 2SC536F
LED P.C.B.		
	2161275018	PWB-EV (W)
IC601, 602	2102000017	IC LB1416
Q601	2104500261	Transistor 2SD438E
or	2104500272	Transistor 2SD438F
D601～604	2109100008	Silicon Diode 10D-1
or	2109100040	Silicon Diode IN4001
	2161276003	PWB-EW (V)
D605～614	2111300255	LED SLB-26GG

CIRCUIT DIAGRAM


EQUALIZER AMP. PCB. PWB–EX
PHONO J101 3mV/47KΩ
Plug in–off
TUNER J102 200mV /100KΩ
200mV /100KΩ AUX J103
200mV /100KΩ J104 TAPE
Output 0.24mV/KΩ
GND
TM501
Q101
Q102
Q103
Q104
FUNCTION SELECTOR S101
TONE AMP. PCB. PWB–EP
S201 TAPE MONITOR
SOURCE
TAPE
Q105
Q106
Q101~104 Q105~106 2SC732TM–gr or 2SC1571–F
Q201.202 2SC1815gr /2SC536F
TREBLE VR201–1 50KB
TREBLE VR201–2
VR202–1 50K–B BASS
VR202–2 50K–B BASS
HIGH CUT FILTER
S202
ON OFF
LOUDNESS
S203–1
S203–2
BALANCE VR203–1 50KHB
VR203–2 BALANCE
VR204–1 50K–B VOLUME
VR204–2 VOLUME
25V
POWER INDICATOR PCB. PWB–EV
(Fuse Resistor) 100–2W R627
Q601 2SD438–d/e
D605~14 SLB26–GG
D601~4 10D–1
R617~624 56
IC601 LB1416
IC602
IC–301 Lch
IC–301
IC–301, STK–459 MAIN AMP. and POWER SUPPLY PCB. PWB–EQ
R315 100 (Fuse Resistor)
+28V
–28V
27V
R313 4.7 (Fuse Resistor)
F501 T1.6A
F502 T1.6A
A–Lch J501–1 (8Ω Load)
B–Lch J502–1 (8Ω Load)
A–Rch J501–2 (8Ω Load)
B–Rch J502–2 (8Ω Load)
S503–a Speaker Selector
S503–b
S503–c
S503–d
off A B A+B
Headphone Jack J503 8Ω Load
R501 180–1W
R502
S501–3
S501–1
S501–2
P501 ~220V 50HZ
C501 0.0047/500V
C502 0.0047/500V
800mA F503
F401 T2.5A
F402 T2.5A
F403 T500mA
T501
AC21.5V
AC32.5V
red
black
gray
blue
green
D401 S4VB–20
C401~4 0.04b
D402 S1VB–10
C410 3300/35
C409 3300/35
Q401 2SD330E or 2SD880Y–gr
D403 HZ15L –2
C411 470/50
C412 220/50
C414 220/35
R402 4.7K–1/2
R401 1K–1/2
R404 1K –1
39.5V
15.1V
14.5V
J506
DC OUTLET 14V POWER SUPPEY FOR MIC MIXER.
TUNER
PHONO
AUX

NOTES.

1. Switches positions are shown as follows.
   - S101 – PHONO (FUNCTION SELECTOR)
   - S201 – TAPE (SOURCE)
   - S202 – OFF (HIGH CUT FILTER)
   - S203 – OFF (LOUDNESS)
   - S503 – OFF (SPEAKER SELECTOR)
   - S501 – OFF (POWER)
2. All resistor's value are indicated in Ω. (K=10^3)
3. All capacitor's value are indicated in μF. (P=10^{-6})
   - t – ceramic capacitor.
   - m – mylar capacitor.
   - ⊣⊢ – electrolytic capacitor.
   - S – polystyrene Capacitor.
   - b – ceramic capacitor.
4. This schematic diagram is subject to a partial change without notice.

SEMICONDUCTORS.

Q101~104.Q105 ~ 106– 2SC732TM–gr or 2SC1571–F
Q201~202 – 2SC1815–gr or 2SC536–F
Q401 – 2SD880–Y or 2SD330–E
Q601 – 2SD438–d/e
IC301 – STK459
IC601~602 – LB1416
D401 – S4VB20, D402 – S1VB10, D601~604 – 10D–1, D605~614 – SLB26–GG

WARNING:FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER RECOMMENDED PARTS. THESE PARTS ARE IDENTIFIED BY(⚠)ON THE SCHEMATIC DIAGRAM.